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SCIENTIFIC GEOGRAPHY: THE RELATION OF ITS CONTENT TO ITS SUBDIVISIONS

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The Criticism of Geography: It should not be possible for any one to say seriously, as was said recently before the British Associa-

tion, that "students of geography are embarrassed by the fact that there is no concensus of opinion as regards either subject matter or method."* Yet a leading English geographer pointed out not very long ago that "the chief problem of geography at present is the definition of geography;"† and, it might be added, the second problem is to fix the respective spheres of its logical subdivisions according to that definition of the whole subject.

That these things should be done is desirable, since many individuals stoutly maintain that geography is not a science at all, and, perhaps with some justification, claim that geographers do not seem to know what geography is and what it is not. In most cases both these contentions are supported by the argument that geography as it is taught and written is not developed about any definite central theory, but that it is merely a "heterogeneous agglomeration of dissociated items" or scraps of information, which are dealt with more elaborately and in a truly scientific manner by astronomers, geologists, zoölogists, botanists, historians, and the like.

Logical Concept Needed: The objections raised against geography, where they are justified at all, are usually based on the character of studies and teaching by those whose geographical training has been inadequate, or who have not formulated any clear or logical concept of what the subject really is. It was pointed out some time ago by Davis that, "we may often benefit by systematically setting forth the place of our individual studies in geography as a whole . . . But it is manifest if we should attempt to make exposition of our ideas concerning the relation of our own studies to the whole subject, we must have previously gained a tolerably definite idea of the nature of the whole."‡ The failure to recognize the significance of that statement furnishes the explanation for much of the trouble encountered by geography, since with an erroneous concept of geography as a whole, it is certain that there will be erroneous interpretations of any particular phase of the subject, and a misuse of items under that head.

Value of a concept with a central theory. To Geography as a Science: If the two contentions of the critics of geography are considered in detail, it appears that both can be rendered unfounded, without much difficulty, and with no damage to the subject. The main contention that geography is not science at all, but merely a grouping of dissociated items, is no longer tenable, if all its items are

* Hoke, G. W. *Scot. Geog. Mag.*, 1907, p. 64.

† Mill, H. R. *Bull. Amer. Geog. Soc.*, vol. 36, p. 658.

‡ Davis, W. M. *Jour. Geog.*, April, 1906, p. 145.

selected with reference to, and developed about, a central theory, into a logical, coherent whole. To accomplish that end geographers as a body must adopt some one scientific concept of the subject and develop it uniformly along that line of thought.

The second contention, that geographers deal with many items which belong to, and are more adequately treated in, other sciences, can perhaps never be eliminated entirely. Apparent overlapping, one subject with another, is likely to exist always in the case of closely related fields, but it usually does not occur to the critics of geography that the so-called borrowing is not all one-sided. Thus if the geographer were to read out from history all matters concerning location, extent, distribution, climate, surface form, population, products, and so on, as belonging to him alone, history as an intelligible study, would be dealt a crippling blow. If the same process were applied to zoölogy and botany those subjects would be reduced practically to systematic morphology and embryology, and the theory of evolution, like the whole important field of ecology, would have no basis on which to stand. Political science and economics could not be taught at all except in their theoretical and abstract aspects. Duplication to some extent is unavoidable, but it is essential to recognize that it is duplication merely in the thing used, not in the method of treating that thing or in the use to which it is put. Thus the second contention likewise can be rendered unfounded by the same course as will remove the first—that is, by the establishment of a concept of geography which gives it a central idea or theory, and by building around that theory a structure of items, every one of which harmonizes with the theory and may be grouped with reference to its particular bearing on the whole subject.

In expansion of the subject: Geography is steadily receiving more recognition in this country, and as its recognition increases, the subject is constantly expanded to meet the new demands put on it as a background for all the humanitarian studies. This rapid broadening of the field of work presents a main cause for the contention that geography “lacks the coherence essential to a science that is to hold together,” for in its expansion, geography as a science has suffered at the hands of those, who, with little or no interest in the subject as a whole, have asked it to do too much in special fields. It is apparently only by the general adoption of some one concept of geography that the exact sphere of the growing subject may be clearly indicated, and the subject saved from those over-zealous friends who would have it do everything. In the light of such a concept, the separate fields of geographical study may then be marked out in a

way which will indicate what is and what is not to be grouped under their heads.

Concepts of geography. The non-geographic: In seeking for a concept of geography which will make it possible to develop the subject as a true science, it may be profitable, from among the multitude advanced, to begin with the statement of a concept which is confused and illogical, and which represents fairly the attitude of many of those not entitled to the name of geographer. One of the most elaborate discussions of geography, by an economist, presents the idea that "systematic geography constitutes a series of descriptive studies of *natural phenomena*."* This concept of "descriptive studies" is expanded somewhat by the subsequent statements that "botanical geography . . . describes the distribution of plants," "zoö-geography describes the distribution of animals," and "anthropo-geography . . . describes the distribution of mankind." Apparently, therefore, the series of descriptive studies of natural phenomena which constitute geography are concerned simply with the "*distribution*" of plants, animals, and man. But immediately thereafter the writer advances the astounding criticism that "for a descriptive study of *human activities* no category is apparently provided,—unless, perhaps, anthropogeography can be stretched out sufficiently to serve." The concept of geography implied in this last statement obviously discards the idea of natural phenomena, as expressed in the earlier definition, and shifts from the idea of simple *distribution in space* for the plants and lower animals to the idea of the complete description of the *activities* of the highest animal, man. Such a mixed concept can lead only to confusion in the mind of author and reader alike, aside from all question whether geography is "descriptive," whether it is concerned mainly with the "description of distributions," or whether all "human activities" must be covered by the subject.

The persistence of such concepts, however, is one of the fundamental causes for much of the criticism directed against the study as it stands to-day, since with the wrong concept in regard to the whole subject, contributions to geography, the teaching of it, the delimitation of its different fields, and even the criticism of it cannot be done intelligently. It is one of the duties of geographers as a group to adopt so definite a stand in regard to what their subject undertakes to do, that such mistaken concepts can no longer persist.

The distribution concept: Among geographers themselves it has been said that "all are agreed that the subject matter of geography

* Keasbey, L. M. *Pol. Sci. Quart.*, 1901, p. 83. (Italics are mine.)

is the surface of the earth together with what is found on that surface, and there is further general agreement in the view that it includes as an essential part an inquiry into causes affecting these things."* In spite of this "general agreement," however, there is apparent difference of opinion on the two sides of the Atlantic, with some in this country leaning toward the European idea. The line of division is concerning the attitude to be adopted in treating "the surface of the earth and what is found on that surface."

European geographers make the central thought "distribution in space" as may be indicated by representative continental and English definitions. Hettner, whose recent concept may be taken as representative of the modern continental group, makes geography "the science of the arrangement of things in space on the earth."† Except in phraseology this definition differs little from the statement by Mill that "geography is the science which deals with the forms of relief of the earth's crust and with the influence which these forms exercise on the distribution of all other phenomena."‡

The best criticism of these "distribution" concepts of geography is found in the answer that "location and distribution must always be important elements in geography" but that if geography is only the science of distribution, it becomes "merely the regional aspect of other subjects" and it is, therefore, "hardly worth while to maintain the study of geography apart from that of the subjects whose regional aspect it considers."§ No unifying principle in the form of an adequate central theory is contained in the concept of geography as distribution alone, hence there is no basis on which it may be made either coherent or logically systematic. Geography as a purely descriptive study of distributions, therefore, has nothing which can justify a claim to rank as a separate science.

The relationship concept: An adequate central idea or theory which does unify the subject, is found in the concept furnished by Davis, who says "the whole content of geography is the study of the relation of the earth and its inhabitants" or "the study of the relation of the earth and life."|| This concept is perhaps the one held most generally by American geographers, as having the evident advantage of giving coherence, and of setting a logical limit, to the field of geography, since those things, and only those things, which enter into relationship with the earth are rightfully to be considered.

* Chisholm, G. G. *Scot. Geog. Mag.*, 1908, p. 565.

† *Geog. Zeitschrift*, XI, 1905, p. 554.

‡ Mill. *Scot. Geog. Mag.*, 1901, p. 508.

§ Davis. *Jour. Geog.*, 1906, pp. 149-150.

|| Davis. *Proc. Am. Phil. Soc.*, XLI, No. 170, 1902, p. 239.

The idea that the essential principle of geography is relationship between the physical environment and the enviroined organism is criticized by English geographers and by a few in this country as leaving out "the consideration of place; an essential consideration in geography."* This criticism, however, finds justification only in an unwarranted narrow interpretation of the original definition, since obviously the question of distribution is one of the fundamental points in the study of the relation of the earth to life, wherever that distribution, or place consideration, has any relation to the environment. If, on the other hand, the study of distribution in geography is not limited to those things whose place relations are concerned with natural phenomena, geography is reduced to absurdity and can be held accountable for the place relations of all human activities, even to the distribution of musical instruments and works of art.

That the relationship concept really gives no foundation for the contention that it ignores place, appears in a later discussion, where it is said, "any statement is of geographical quality, if it contains a reasonable relation between some inorganic element of the earth on which we live, acting as a control, and some fact concerning the existence or growth or behavior or distribution of the earth's organic inhabitants, acting as a response."† Thus the idea that geography is the study of the relation of the earth to life makes full allowance for all that the European concept of distribution can logically claim. In addition it changes the emphasis from mere description to scientific explanation, broadens the field materially, yet sets definite bounds for it, and perhaps most important of all, it provides the unifying principle of relationship, about which the subject may be developed as a true, organized science.

The further objection that the aim of geography is concerned more especially with human life, rather than with life in general, as directly implied in Davis's definition, cannot be raised seriously, since those who insist on the super-importance of the man element in geography lose nothing by adopting the broader concept. The human relations may be studied just as readily and just as exhaustively as a special field of the broader subject, and at the same time they may receive material assistance in their own statement by the development of allied fields in connection with other forms of life.

Finally, the objection that such a broad concept makes the subject too vast for any one man to handle is no discredit to geography as a

* Chisholm. *Scot. Geog. Mag.*, 1908, p. 571.

† Davis. *Jour. Geog.*, April, 1906, p. 149.

science, any more than it discredits chemistry to have workers in the special fields of organic, inorganic, physical and even physiological chemistry. Because of its many-sided relations the content of geography is perhaps more complex than that of most other sciences, and hence likely to be marked by more subdivisions and separate fields of study. But it is more desirable, than otherwise, that there should be recognized special phases of geography for which special training is required. Under such conditions the whole science can much more readily be advanced, if those special phases are developed, first, according to a common concept of the whole subject, and, second, with a proper understanding of the logical relation of each phase to its fellows.

Significance of relationship: Accepting the relationship concept of geography it appears possible to define the provinces of the various specialized fields of geography with a degree of clearness not attainable under the narrower distribution idea. At the same time it is possible to indicate the relation of the different fields to the whole subject and to each other, and to arrange them all in an orderly system or logical grouping, such that, when each field has been developed to its full extent, the result will represent the complete structure of a systematic, unified science of geography. Such a definition and grouping of the special phases of geography seems to be the only way to free the subject from the many criticisms directed against it, and above all to demonstrate clearly that geography, properly interpreted, is a coherent science, capable of standing on its own merits.

General divisions of geography under relationship concept: The first natural line of division in geography lies in the recognition that one side deals with the inorganic environment and the other with the organic responses. The line of cleavage between these two sides is sharp enough so that there is little room for question regarding their relative spheres. Each side, however, is so broad that it, too, is capable of being split into various subdivisions, any one of which may be made the sole subject of individual study. Designating the whole inorganic side by the comprehensive term, physiography, and the entire organic side by the corresponding term, ontography, the special subdivisions of each may be regarded in their relation to each other, to these main divisions of the subject and to scientific geography as a whole.

Physiography and its subdivisions: So far as the inorganic side is concerned, the content and subdivisions of the subject are readily marked out according to a natural four-fold grouping. Thus there

are the three chief elements of the physical environment, to which responses may be made, the land, the air, and the water. To these three must be added the fourth group of conditions which may induce separate responses of life, namely, those earth relations which are the result of the earth being a member of the solar system, and which are usually collected under the unsatisfactory name of mathematical geography. It is, however, in itself, not a "geography" at all, nor is it mathematical, beyond the fact that recourse is had to mathematics in explaining some of the items. The use of such a term for a sub-head of physiography is entirely illogical, and hence some better term may be sought. It may be suggested that *geoplanetology*, or the study of the earth as a planet, would be a more appropriate designation, since it is really the planetary aspects of the earth which are the chief aim of the study. This term has the added advantage of being uniform in character with the adopted names of the associated studies. Furthermore, under the head of the planetary aspects of the earth, place may be found for the logical grouping of certain items, such for example, as the arrangement of land and water, which mathematical geography does not include, and which can not be readily placed under the head of the physiography of the lands. Meteorology, oceanography, and physiography of the lands, represent the three other phases of general physiography.

The logical grouping: In erecting the system in which these four divisions are to stand in logical relation one to another, certain conditions of inter-relationship make an absolutely logical progression impossible. Thus the study of ocean currents under the head of oceanography involves in their complete explanation a previous understanding of certain phenomena of the atmosphere, especially winds. The study of the physiography of the lands is dependent on meteorology for the full explanation of some of its important aspects, while in turn, meteorological phenomena are to a certain extent influenced by land and water conditions. The grouping which is adopted, therefore, must be the one which does least violence to the inter-dependent features of the subject.

It is obvious that the group of planetary earth relations, or geoplanetology, is independent of the others, so far as its own things are considered, whereas both meteorology and oceanography depend upon it in several important particulars. Hence it may be regarded as the basis from which the system is to start. Meteorology especially bears an intimate relationship to the planetary qualities of the earth, its phenomena are more nearly planetary, and it is necessary for the explanation of some aspects of both oceanography and physi-

ography of the lands. For that reason the study of meteorology is logically the second sub-head under the general subject physiography. Oceanography, through tides related to the planetary aspects, and through waves, currents and so on related to meteorology, is somewhat closer to both these than is the study of land forms. Consequently, oceanography and the physiography of the lands stand third and fourth respectively in formulating the order for the consideration of the special fields of physiography with reference to a logical system of scientific geography.

It must be recognized, however, that even though these four subdivisions provide under one head or another for the study of all phenomena entering into the physical environment, they do not furnish all that is needed in the correlation of inorganic environment and environed organism. As here presented, the critically important element of climate is not provided for. It is true that the explanation of the individual phenomena which enter into a climate is included under the head of meteorology, but meteorology, however necessary for an understanding of climates, does not and can not properly give any adequate idea of the different climates which are so important in their influence on life responses. Furthermore, the study of climates is not necessarily to be considered as a sub-head of meteorology, to be studied under that head, simply because it draws much of its data from that field. Climate has much to do with the planetary characteristics of the earth, aside from its relations to that field through meteorology. Climate is also concerned very intimately with certain aspects of land and water conditions. For these reasons, it seems that in any logical scheme of geography, the study of climates must be included as a sub-division of general physiography, along with the four already mentioned, and it must come after the study of those other divisions. Climatology, therefore, becomes the fifth and culminating department of physiography. In support of this arrangement it may be argued further that, in addition to conforming as nearly as possible to the logical order of sequence, it brings at the end of the physiographic list those particular phases of the inorganic environment—the surface of the lands plus climates,—to which organic forms show the most intimate, most numerous and most complex relationships.

Ontography and its divisions: Confusion. On the other side of geography, that is, ontography, the sub-divisions are more complex, they are comparatively less fully developed, and they lack uniformity and system. It is perhaps a natural outcome of the complexity of the subject that there should be temporary confusion on the organic

side and hence delay in evolving a systematic classification corresponding to what has been done for physiography. Yet it seems more likely that this absence of a logical grouping for the departments of ontography is the result of two other chief causes: first, the failure to establish a logical concept of geography as a whole, around which the entire science is to be built, and second, the general tendency to over-emphasize the different phases of the subject dealing with human life, without seeing their proper relation to the other co-ordinate aspects of the subject.

Under the concept that geography is the study of the relation of the earth to life, all forms of life responses must be provided for in the ontographic grouping. At the same time, moreover, any careful consideration of the relation of the earth to human life,—to which many are inclined to limit the subject,—will reveal immediately that such a restriction of the field not merely narrows the study, but renders even that part incapable of its full development. Life is so completely a unit that it is not possible to include some forms and ignore others if the human side is to be made intelligible. Thus, for specific example, man in the dry deserts of the world, is one of the plainest products of environment to be found, but he can not be considered intelligently in the true relation to his environment without a prior understanding of the relation of the desert conditions to the other forms of life which react on the human being.

The classification of ontography is further hampered by the tendency of many, especially those who come at geography from the outside, to split off a part of the real content of ontography, and use it, with outside material, for special consideration yet under the general name of geography. Few, if any of these, have undertaken, even in their own minds, the task of erecting ontography into a co-ordinated system, one part of which is related to the others, and each of which harmonizes with a scientific concept of geography as a whole.

Finally, much of the work which is now grouped more or less indiscriminately in the ontographic field has been done not by geographers, but by others,—historians, economists, biologists, and the like,—who have desired the geographical relations mainly as a background for their own special lines of endeavor. For that reason the nature of the work has been colored by the special subject from which the investigator came, and the scope of the various sub-divisions of ontography has often been indicated with reference to this outside emphasis, rather than having the work and the scope represent a product guided by a broad concept of the real field of geog-

raphy. The definition and grouping of the ontographic fields, in a co-ordinated system of scientific geography, therefore, though making use of existing terminology, frequently involves radical disagreement with many of the concepts which have been advanced from one side or another.

Terminology: Among the many terms already invented to cover special phases of ontography, the most used, the ones generally accepted, and worth considering, are phytogeography, zoögeography, anthropogeography, economic geography, commercial geography, historical geography and political geography. Such terms as "social," "moral," "business," "applied" geography and so on are not here considered as having sufficient individuality to warrant their inclusion as separate fields. Concerning some of the recognized aspects of the subject, especially the last four in the above list, there is much discussion as to the field covered, and their relations not only to geography but also to the subjects from which the qualifying adjective is borrowed.

The main logical divisions of Ontography: The grouping of these sub-divisions of ontography must be made in accordance, first, with the concept that geography is the study of the relation of the earth to life, and second, with the principle that life is a unit, in which the higher types are reacted on to a great extent by the types lower in the scale. Thus the relations of human life to its physical environment are both direct and indirect, the latter coming through man's relations to the lower forms of life which are indispensable to his existence. For this reason, the consideration of the human phases of ontography can not be made the primal consideration in the organized science. Since, moreover, what is true of man, as the highest animal, is to a greater or less degree true of most lower types of animal, the basal consideration must begin still lower down with the responses of plant life.

It appears at once, therefore, that there are three logical main divisions of ontography, according to the division of life into the natural groups, plants, animals, and man, the justification for the last division resting largely on our greater interest in the complex and multiple responses of our own genus. There are, then, as a basis from which to start, the three co-ordinate subdivisions of ontography: phytogeography, zoögeography, and anthropogeography, standing in their logical order of inter-relationship or dependence.

Phyto- and Zoögeography: As for the field covered by the first two divisions, there is a more or less common inclination to limit them to facts of distribution alone. This attitude is indicated by the

typical definitions quoted above, to the effect that "zoögeography describes the distribution of animals" and so on. Such an interpretation of phyto- and zoögeography can not be harmonized with the concept of geography as a whole, which is to crystallize the entire body of the subject into a systematic science. It is necessary to expand the idea to include also the habits and characteristics of plants in so far as they arise from the conditions of their environments. Thus the consideration of why desert species include few important seed producing types and why the most prolific seed producers are found in largest numbers in the warm and moist localities, are not only important responses of plant life to environment, but are also fundamental factors in the relation of human life to its surroundings. Phyto- and zoögeography, therefore, must be broadened beyond the simple concept of distribution of families, genera and species, in space; and both these fields must be developed along the broader lines before the full statement of anthropogeography is possible.

Anthropogeography. Its scope: Anthropogeography may be taken as the culminating, just as it is logically the last, main division of geography in the systematic grouping. The various concepts of anthropogeography differ widely in the breadth of view. A broad concept regards the subject as seeking "to devise an elucidative connection between the separate geographical frameworks and the history that has been erected and the civilization that has been worked out with them."* This definition apparently makes anthropogeography include all of ontography except the co-ordinate fields of phyto- and zoögeography. An intermediate definition states that "anthropogeography describes the effects of the environment in constituting the organic variations which have occurred in the course of human development,"† and cites as examples the shape of the head, pigmentation of the skin, texture of the hair, color of the eyes, stature, physique and the like—that is, relations all of which are morphological in character. Most narrow of all is the common idea that anthropogeography is the study of the "distribution of mankind," thus harmonizing it with the common concepts of the two other branches of ontography.

This last concept of anthropogeography, however, may be regarded as the result of first, the distribution concept of geography as a whole and second, the confusing of that term with *anthropogeography*,—without the *geo*,—or that branch of anthropology which

* Eckert, M. *Scot. Geog. Mag.*, Vol. XXIII, 1907, p. 562.

† Keasbey. *Pol. Sci. Quart.*, 1901, p. 483.

avowedly treats of the distribution of the races of mankind and their local variations. The relation of these different phases of life study may be shown graphically by the following method of grouping:

SCIENCE—BIOLOGY:	VIATION AND DISTRIBUTION:	SCIENCE—GEOGRAPHY:
Study of the thing itself,		Study of Relationship,
Phytology (botany),	Phytography,	Phytogeography,
Zoölogy,	Zoögraphy,	Zoögeography,
Anthropology.	Anthropography.	Anthropogeography.

As indicated by this grouping, phytography zoögraphy and anthropography stand between biology on the one hand and geography on the other, but since they use geographical things, essentially locations alone, mainly in biological relations, they may be considered merely as the regional aspects of their respective subjects, and distinctly apart from the corresponding phases of geography where the idea of relationship is the dominant consideration.

The three primal phases of ontography, therefore, are not to be regarded merely as descriptions of distributions of life forms, but must be interpreted in the broader sense of including every sort of life response to the physical environment.

Its Divisions: If anthropogeography is defined as the study of the relation of man to his environment, it is necessary to group under that general head the various subdivisions of the human aspects of geography,— a number of which are already extensively developed and distinguished by separate names. Economic, commercial, historical, and political, geography, for example, thereby become merely specialized fields of investigation for the anthropogeographer. They are not any longer to be regarded as co-ordinate with that subject or with phyto- and zoögeography, both of which latter phases may themselves have subdivisions analogous to these subordinate aspects of anthropogeography.

It is around these subordinate phases of the human side of the subject, however, that most of the recent discussion has centered, from which most of the criticism of geography as a science has arisen, and with respect to which there is perhaps the greatest need for a systematic grouping in accord with the concept of geography as a logically organized study.

Economic and commercial geography: There is such wide diversity of opinion as to what is the field and the relationship of some of these special subjects, that it again is necessary to fix their limits with respect to subject matter before they afford any definite or common basis for grouping in the whole plan of geography. Most

of the uncertainty hinges about economic and commercial geography, which by some are regarded as essentially synonymous terms, and by others are held to be distinct and separate. In this case also it may be most instructive to begin with a concept formulated by one not a geographer, for, at the same time, it illustrates, perhaps better than any other, the way in which confusion has been introduced into the subject.

Economic Geography: The Economist's Concept: In answer to the self-asked question, what is economic geography? this writer first concludes that it is not commercial geography, and then goes on to say, "Our friends the geographers would doubtless answer, economic geography traces the influences exercised by the physical environment on economic activities . . . Economic geography does that and much more: it seeks to ascertain and explain the *geographical division of labor**—that is, the localization of industries, in terms not alone of the physical environment, but of all the factors involved, cultural as well as physical . . . nor is any fact excluded which bears on the geographical division of labor, *however remote it may be from the physical environment*."*† This concept is worth following in its further elaboration as follows: "Economic geography will, therefore, consider first, under the head of *natural** controls, how relief, climate, soil, minerals, and other natural resources, influence the geographical division of labor. It will next consider, under the head of *human** controls, race, religion, languages, nationality, and government, in so far and only in so far as they affect the geographical division of labor. And finally it will consider, under the head of *economic** controls, to what extent transportation, the machinery of exchange, the supply, skill, and standard of living of labor, the supply, efficiency, and cost of capital goods, the organization of the factors of production, the methods of production, the principle of competitive and complementary industries, and other economical factors, determine the geographical division of labor."‡ Arguing from these premises the writer then draws the startling conclusion that "economic geography is *not a part of geography* . . . but an *integral part of economics*"* and treats his readers to the amusing deduction that "for the same reasons, it would appear that economic geography *can not be adequately handled except by a trained economist*."§

So far as this concept is concerned, no one, least of all a trained

* Italics are mine.

† Robinson, E. V. *Pub. Amer. Econ. Ass'n.*, Vol. X, No. 1, 1909, p. 5.

‡ Robinson. *Ibidem*, p. 6.

§ Robinson. *Ibidem*, p. 10

geographer, would dispute this last contention. A coherent science of geography, can by no logical process of reasoning be made to include such items as the consideration of the "machinery of exchange," the "efficiency of capital goods," or the "organization of the factors of production," "however remote from the physical environment." It is immediately obvious, from a glance at the things enumerated, that the concept is that of a trained economist, who is defining, not economic geography, with a concept of general geography in mind. but who is defining, regional economics, with a very clear concept of general economics in mind. Unfortunately, however, just so long as things may be written and taught, according to such concepts, and put out under the guise of geography, no matter what the qualifying adjective, just so long must geography be open to the criticism of encroaching on other subjects, lacking co-ordination and any unifying central theory.

Any phase of study bearing the nounal designation geography is to be defined in terms of geography, and not in the terms of the subject from which a qualifying adjective may be drawn. It may be worth noting, for example, that economic zoölogy and economic geology are accepted designations of special phases of their respective subjects and their definitions are made in terms of zoölogical and geological relations—not with respect to economics. The above concept, therefore, may be held simply as a sample of what economic geography is not.

Another typical definition which comes from the economic group is less objectionable, but fails to fit into the orderly plan of scientific geography. After an attempted separation of man from the lower animals on the basis of psychic differences this writer concludes that it is the "physical environment which determines the nature of the beast and the economic environment which occasions the character of man."* "Economics . . . may consequently be accepted as the fundamental criterion of civilization" . . . and "granting this, scientific geography requires the economic element to complete its classification and carry its descriptive study into the realm of human affairs." Going on with his analysis, this writer points out that the two important aspects of economics are the question of supply and of demand, the latter being the result of psychic phenomena and the former being controlled by physical phenomena. The definition of economic geography, therefore, becomes, "the *descriptive* study of the natural resources of the earth *in their application*,† through the

* Keasbey. *Pol. Sci. Quart.*, 1901, p. 87.

† Italics are mine.

processes of production, distribution and exchange to the satisfaction of human wants."* This concept, by placing the emphasis on *use*, and simple *description*, appears to be phrased with the idea that economic geography is to serve as an introductory study to economics, rather than to take its proper place in a system of geography as a perfect and exact science.

Both the foregoing definitions, which may stand as types of their group, suffer because the presence of the qualifying adjective, "economic," has led to the impression, among economists especially, that the definition of the subject must be made in the terms of the science of economics rather than in the terms of a science of geography.

Geographer's Concepts: "Distribution" Group. From these unsatisfactory concepts, placing the emphasis on the economic, rather than on the geographic, it is not a very long step to a concept held by many geographers, especially among those of the European group. In a recent discussion of economic geography before the Scottish Geographical Society, Chisholm advanced no specific definition of the scope of the subject, but implied his concept in his choice of illustrations. First, they were taken from the field of production, "that department of economic inquiry in which the relations between geography and economics are probably most numerous and closest,"† and in which the "simplest case . . . is the production of agricultural commodities for local consumption." Next the idea of transportation and trade was included, as indicated by the discussion of the wheat districts of Canada, Argentine and Siberia, with the remark that "in facilities for reaching over-sea markets, however, the three areas differ very greatly."‡ At the same time the importance of the effect of the "nature of the commodity" was considered, in the case of trade to foreign markets, while under the head of further considerations affecting the "transport and exchange of commodities"§ special emphasis was placed on the effect of the "carriage of bulky goods in cheapening the carriage of the less bulky." By way of illustration, a long analysis of British trade was brought forward. As a final element in the field of economic geography, the discussion of the factors influencing the "localization of industry," was taken up with reference to the character of the materials, the labor supply, local market and so on. A specific example of the items treated is found in the statement that the "proportion of the fuel cost in the

* Keasbey. *Ibidem*, p. 81.

† Chisholm. *Scot. Geog. Mag.*, XXIV, 1908, p. 114.

‡ *Ibidem*, p. 116.

§ *Ibidem*, p. 119.

cost of the finished article must be important in deciding the most important seat for industries.”* Thus though no set definition is framed, economic geography, by implication, is concerned with the whole wide range of questions involved in the subjects of production, transportation and consumption.

It is immediately evident that such a concept of economic geography, can not be harmonized with the dominating principle of relationship between environment and life response, nor can such an economic geography be a part of any unified science of geography. Even if economic geography is to deal with some phases of production, transportation and consumption, it can not be held responsible for explaining all the facts of industry and commerce, any more than it can be held accountable for all the facts of history or other human activities. In the last quotation, for example, as to the effect of “fuel cost, etc.,” the thing dealt with is clearly not in geographic relations, but stands simply as an item in the problems of industrial processes and costs. It is a case of dealing, not with economic geography, but with industrial economics. This error may be directly traced to the concept that geography must explain the distribution or place of everything, a concept which when applied, as appears here, can lead only to absurdity.

“Relationship” Group: A definition of economic geography which does fall in line with the scientific concept of geography, is found in the brief, but effective, statement, that “economic geography is the description and interpretation of lands in terms of their usefulness to humanity,” and that its “net result is the understanding of the *relationship*† between the people of a district and their physical environment.”‡ Such a definition not only recognizes the controlling idea of relationship in geography, but also immediately indicates where economic geography must be placed in the general grouping—namely, under the head of anthropogeography, as affording the basis on which human progress is to be interpreted. Furthermore, this definition alone makes possible a broad concept of economic geography, since it minimizes the narrow idea of actual use. The question of “the usefulness to humanity” is a thing quite apart from the mere consideration of application of material, etc. That this aspect was clearly recognized in framing the definition is indicated by the further significant statement that “in economic geography, resources become almost as important as products, because resources of to-day make industries of to-morrow” and in the “explanation and proper

* *Ibidem*, pp. 117-118.

† Italics are mine.

‡ Smith, J. Russell, *Bull. Amer. Geo. Soc.*, 1907, p. 472.

estimate of resources lies the kernel of economic geography.”* Production, and its resulting activities, must admittedly, so far as it shows relationship, be considered as a part of economic geography, but it is only a part.

Definition and place of Economic Geography: Economic geography may be regarded as concerning itself with those relations which hinder or favor human progress; such as the effect of climate on the requirements of food, the control of the distribution of food products, the relation of topography to the discovery and winning of useful minerals, the relation of surface configuration and climate to the use of the soil, and so on. The definition quoted above might then be recast to read, “economic geography is the study of the different types of environments in the relations they bear to the activities of human life.” Under such a definition any particular region may be studied, as representative of a given type of environment and its value to human activities may be carefully estimated, entirely apart from any actual development, use, or application of resources by human inhabitants. This definition, furthermore, is radically opposed to the idea that economic geography is essentially the consideration of the geographical division of labor, or deals extensively with such fields as the medium of exchange and the localization of all industries.

Such a concept, as stated here, gives economic geography a definite basis on which to stand, a character in harmony with the concept of geography as a co-ordinated science, and importance enough to insure it a prominent place in the study of the subject. At the same time it lifts economic geography from a plane where it can be “treated only by a trained economist” to a plane second to none in the special fields of true geographical investigation. Economic geography, according to this concept, stands first, and most important, of the subdivisions under the head of anthropogeography, as furnishing an estimate of the varied physical foundations on which man has risen above the savage animal and based his upward course in civilization.

Commercial geography. Its faults: Commercial geography, which is often confused with economic geography, is perhaps the special field of the subject which at present is in the most chaotic state, with all manner of justified criticisms directed against it. Most of this criticism is based on the character of the text books of commercial geography, the majority of which were not written with any reference to a system of geography. For this reason they have tended to degenerate into a series of “convenient repositories of

* *Ibidem*, p. 111.

useful information," thus, in a measure, living up to their common ancestry in a German work which was designedly framed to set forth a mass of items "useful for the merchant to know." The line of reasoning from "merchant" to "commerce," and then to "commercial geography," to designate this body of non-descript items is obviously the result of the distribution concept of geography, which would include the place relation of anything or everything.

Commercial geography, as a part of scientific geography is concerned simply with the relations of the earth to the movement, circulation or exchange of utilities. It, therefore, depends intimately on economic geography, and may for many reasons be considered as merely a special phase of economic geography.

As a sample of the extent to which the subject gets away from this simple and logical concept the following items may be taken as typical. In a discussion of commercial geography printed some time ago, the trade of Glasgow was analyzed at considerable length. After stating that raw sugar imported from the Baltic ports is sent "by rail to the Greenock refineries," the discussion continues—"It is curious that the refined (and accordingly more valuable) sugar that comes from the continent to the same ports, when destined for Glasgow, is sent by canal, *the explanation being, no doubt,** that the canal barges are more convenient for delivery to the Glasgow warehouses than to the Greenock refineries."† Such an item may well be "curious," but it can not be regarded as belonging to commercial geography unless difference in the physical conditions of the two places is the real reason for this minor difference in the transport of the goods. Instances of this sort might be multiplied indefinitely, and with even greater inconsistency as for instance in the all-comprehensive estimation of the subject by a German geographer, who would include among the many things which the commercial geographer must know, such items as the water supply, the state of decomposition of the different kinds of rocks, the regional distribution of the different kinds of roads, and the average duration of journeys.‡

Definition of Commercial Geography: If commercial geography is to be held accountable for a description of all exchanges of goods, or for an analysis of every aspect of trade down to its most insignificant local or curious detail, that so-called commercial geography cannot be an orderly study, nor can it be an integral part of a science of geography. If, on the contrary, commercial geography is defined as, and limited to, the study of the relationship between physical

* Italics are mine.

† Chisholm. *Scot. Geog. Mag.*, 1908, p. 123.

‡ Eckert, *Scot. Geog. Mag.*, 1907, pp. 563-566.

conditions and the transportation and exchange of human utilities, it immediately becomes capable of orderly arrangement, it is an integral part of a science of geography, and its place in the logical grouping of the fields of that science is obviously next to economic geography. It may be considered either as a sub-head under that subject or with equal justice placed as a co-ordinate phase of the large field of anthropogeography, in deference to the importance of commerce to modern civilization.

According to the above definition the field of commercial geography is made distinct, and all items, however important from the commercial standpoint, but not entering into geographical relations, are excluded. Commercial geography seeks merely to study the commercial responses to conditions of the environment, and does not in any sense seek to describe or explain all existing or conceivable trade relations. Commerce and commercial geography are distinct and separate fields of study. Furthermore, commercial geography is not concerned with production beyond the fact that certain human utilities are brought into existence, and hence may enter into movements and exchanges which may be determined by conditions of the environment. Resources and productions are the *foundation*, but their consideration is not the *field*, of commercial geography.

Economic geography deals with the types of environment in which man may live; commercial geography deals with the relationships of special phases of human activity developed in certain of those types. The two plainly enough can be treated to advantage simultaneously, in so far as any particular type of environment is concerned, but the line of division between the two phases may equally well be drawn as sharply as between any other two phases of geography.

Historical and political geography: The remaining two existing fields of ontography, historical and political geography, are relatively much less extensively developed than are economic and commercial geography; in fact they have in many places been accorded barely any recognition. Historical geography, so far as it has been developed at all, has been done mainly by students interested primarily in history, and working without reference to any logical structure of geography in which their results were to be an integral part. Political geography has rarely been the subject of mature, systematic study, especially on this side of the Atlantic. The natural result of these conditions has been to leave the field of ontography in an unfinished and indefinite state, since, in certain respects, historical and political

geography are to be regarded as marking the culmination of the subject.

Criticism of historical geography: The objection has been raised that the designation, historical geography, is a misnomer, since "geography is not a historical study," and that this field might better be called "geographical history."* The former term, however, is in general use, and may be justified on the grounds that it is uniform in character with economic and commercial geography, and may be interpreted, as in the case of these latter, to imply simply relationships of a particular sort, here between environmental conditions and responses in the past. It is further criticised that the so-called historical geographies are "merely mechanical combinations of out-of-date editions of political geographies . . . bound together in one volume" and that "in order to systematize the study of historical geography a basic principle is necessary."† The first part of this contention finds its cause in the fact that historical geographies have been developed with reference to historical relations, which are avowedly chronological, and therefore unsystematic, and not with reference to geographical relations. The second part of the contention may be satisfied by introducing into the subject the basic principle of "the relation of the earth to life," which immediately sets the bounds of the subject and throws it into the orderly scheme of a geographical science.

Definition of historical geography: It is necessary to recognize, however, that the "historical" part of the term may be interpreted in different ways. It may be taken to mean the history of man in the progress of his civilization, or it may be taken to mean the political history of various human groups or nations. According to the adoption of the one meaning or the other, the subject has a different significance to geography as a whole. If the first interpretation is followed, it will result in a co-ordinated study of the relationships between man and his environments at different times in his progress, and thus furnish a connected, complete background for the interpretation of existing civilizations in their geographic relations. If the second interpretation is followed it will lead to the truly geographic explanation of many events in the past, such for example, as the strategic value, and defense, of the pass at Thermopylæ, of interest and help in the study of history, but of little or no significance to the present problem of the study of the relation of the earth to its inhabitants. From the standpoint of geography as a science, there-

* Davis. *Proc. Amer. Phil. Soc.*, XLI, 1902, p. 241.

†, Keasbey. *Pol. Sci. Quart.*, 1901, p. 89.

fore, historical geography may more profitably be interpreted in the sense that it is the study of the relations of the earth to the development of human civilizations. Defined briefly, historical geography may be considered as the application of economic geography in the past.

The development of the subject along these lines would necessarily involve the most important responses in the history of groups or nations, and would similarly subordinate the great mass of interesting or curious items, having little or no bearing on the understanding of the earth in its present relations to life.

Political geography: Unsatisfactory condition. Political geography stands as the one phase of the subject, so much neglected in the mature study, that few even have ventured a definition of its particular field. This state of affairs accounts perhaps for the criticism that the text-books of political geography, "are for the most part made up of variegated maps exhibiting the territorial extent of states, population statistics set forth in tabulated form, and running commentaries on the topography of the various countries considered."*

Concept of Political Geography: Among the few definitions which have been framed, however, unanimity of concept is conspicuously lacking. A definition typical of one group says "political geography may be defined in general terms to be geography in relation to political and social institutions."† The use of the word social in this definition makes the exact sphere vague, for the reason that many social institutions might be mentioned, under the broad interpretation of the term, which are so far remote from political institutions as to preclude coherence in any study attempting to cover both. This difficulty is not removed by the further elaboration of the concept where it is said that, in teaching the subject, emphasis is laid on (1) explaining how each country studied came to be a separate, distinct country; (2) on its political institutions, and the geographic influences that have affected them, and (3) present political problems of paramount interest in each of the countries studied.

Such a concept cannot be accepted as it stands, since, for example, explaining how each country came to be separate, leads in most cases far into the realm of pure history; the study of political institutions, as such, belongs to the student of comparative governments; and political problems of paramount interest, may it be true,

* Keasbey. *Loc. cit.*, p. 89.

† Johnson, E. R. *Bull. Amer. Geog. Soc.*, 1906, p. 107.

but do not necessarily, enter into geographical relations; where they do not, the entire consideration of them is the task of the political scientist, not that of the geographer. In these respects, therefore, the concept includes too much, and in doing so leaves the true field of geography. In other respects, that is, when regarded from the standpoint of evolving an orderly science of geography, which shall be both logical and complete, this concept is too narrow.

Definition of political geography: Political geography should be interpreted not as the study of the geographical relations of political institutions, and problems, but more nearly in accordance with the concept as stated by Keltie, to the effect that "Political geography is the application of the data included in these two great divisions of the subject (physiography and anthropogeography) to the affairs of those groups or communities of men, which in their more developed condition we designate states or nations."* A simple adaptation of this concept may define the field of political geography as the study of the relations between political communities, or nations, and their surroundings.

Such a concept makes political geography dependent on all the other phases of anthropogeography, since economic, commercial and historical geography are necessary precursors to the complete understanding of the relations between national states and their surroundings. This concept also makes political geography essentially synonymous with one phase of regional geography, the regional unit being the political division in which the group is situated. Finally such a concept accords to political geography, the important function of bringing together the separate threads of anthropogeographic study into a definite whole, in which the goal attained is the interpretation of *modern* civilizations in their relations to the earth.

Political geography is consequently the logical capstone of the entire subject, and instead of deserving neglect, it is perhaps the most fruitful field of investigation now open to the geographer. Its successful development, however, hinges on the development of systematic geography as a whole, according to a single scientific concept or central idea. The comparative geography of different regions can not be treated satisfactorily until some system of geography has been adopted under which all investigators may work along harmonious lines.

The ontographic grouping: According to the various spheres assigned to the different phases of ontography by the preceding definitions and discussion, the existing phases stand in definite re-

* International Geography, p. 109.

relationships to one another and may therefore be grouped in the following progressive sequence. By applying the same principles other phases which might be developed could readily be placed in their proper association in the grouping as it stands:

GEOGRAPHY:

Organic side—Ontography.

1. Phytogeography.
2. Zoögeography.
3. Anthropogeography.
 - a. Economic geography.
 - b. Commercial geography.
 - c. Historical geography.
 - d. Political geography.

Such a grouping according to a single dominating, unifying principle, which is kept prominent at every turn—such a grouping, and only some such, can make geography an orderly study and make possible its reduction to a systematic science, not only in one part, but in every part, not merely in the general considerations, but in the regional studies as well.

Systematic Ontography: It is true that the ontographic aspects of geography are to-day studied in large measure individually instead of generically, but it is not necessarily so, for the reason that wherever similar controls operate on similar forms of life there are similar relations of responses of organism to environment. Thus it is possible under the relationship concept to have systematic economic geography, just as readily as to have systematic physiography, since the classification of environments is as practicable as is the classification of land forms or climates separately.

As soon as a classification for economic geography is adopted, the general principles of the subject may be elaborated, following which the development of regional economic geography—all on a systematic basis,—may be done as readily as regional physiography is studied systematically to-day. With the classification for economic geography completed, it serves as the logical basis from which to develop the other, dependent, phases of the subject, according to similar systematic treatment, a condition especially to be desired in the case of political geography.

Conclusions: One of the most serious criticisms of geography, to the effect that “scientific geographers stop short before the phenomena of civilization and take no account whatever of the recorded facts of history,”* could no longer have any foundation in case of a

* Keasbey. *Pol. Sci. Quart.*, 1901, p. 82.

scientific geography developed according to such a grouping as here presented. In this grouping there is a logical place for all the "phenomena of civilization" and the "recorded facts of history," in so far as they enter into true geographical relations. More than that is not the province of any plan of a scientific geography.

The question may also be raised as to the real position of the physiographer under this concept of geography. The position seems far clearer and more important than under any other concept, for, while physiography may be studied and considered by itself, geography, as here interpreted cannot be taught or studied successfully without physiography—the environment to which the life responses are made. Investigations in physiography alone, therefore, as serving to make clearer important aspects of life environments, are direct contributions to the subject of geography. The physiographer then is a geographer in the broad sense, and specifically a physiographic or physical geographer, in the same way as there are engineers in general, with civil, mechanical or electrical engineers in particular. This interpretation of geography consequently takes nothing from the importance of physiography—quite on the contrary it elevates that part of the subject to the plane of furnishing the foundation without which the rest of the subject can not be erected.

Finally, it has been well said in criticising adversely the concept here adopted for geography as a whole, that the "function of any science must be stated in such a manner as to afford a criterion of when its task is accomplished."* Such a statement of the function of geography as a science is possible only through the adoption of this principle of relationship by which the entire field is unified. That this concept makes it possible to mark the accomplished task is indicated in the establishment of an orderly system as is here suggested: a system of defining and grouping which builds up steadily and logically from control to response, from foundation to superstructure. In physiography its subdivisions are arranged in sequential order, culminating in the most important aspects of the physical environment—physiography of the lands and climates. In ontology, its divisions fall naturally into such a grouping that all lead up to and culminate in the most important aspects of the human responses—that is, in the geographical relations of human civilizations. Geography thereby is given the necessary qualities of a coherent science, with a perfectly distinct field not covered by any other existing science, and no longer is open to the criticism of being merely "a heterogeneous agglomeration of dissociated items."

* Chisholm. *Scot. Geog. Mag.*, 1908, p. 568.